

### **REMARKS**

The specification has been amended in paragraphs 53, 54, and 55 of the published application, US 2007/0092726. Amendments have been made to these paragraphs to correct misspellings and other informalities.

Paragraphs 53, 54 and 55 have also been amended to recite that the glass transition temperature was "at -70° C." rather than "at 70° C." As indicated by the inventor, Dr. van Benthem, in the Declaration of Rudolfus van Benthem, Ph.D., under 37 C.F.R. § 1.132 ("the van Benthem Declaration") which is submitted herewith, the recitation of "at 70° C" is "an obvious error" because "[o]ne skilled in the art would have understood that the glass transition temperature of the washed powder including paraffin oil would be -70° C rather than +70° C." (van Benthem Decl. ¶ 13, footnote 3.) In addition, the disclosed procedures of the Examples inherently produce washed powders, which are said to contain paraffin oil, having a glass transition temperature of -70° C. Support for the amendment is inherently present, and one skilled in the art would have been able to discern the obvious error.

No new matter has been added by any of the amendments.

### ***Interview Summary***

The undersigned thanks Examiner Freeman and Supervisory Examiner Shosho for the courtesies extended during the telephonic Interview held on February 5, 2010. Examiner Freeman is also thanked for issuing the Interview Summary on February 18, 2010.

We bring to the Examiner's attention that the present submission includes the van Benthem Declaration as noted above which is a Declaration of the inventor, Rudolfus van Benthem, Ph.D., under 37 C.F.R. § 1.132. The substance of the Declaration is not coextensive with any of the items discussed with the Examiners during the Interview. It is therefore requested that the Examiner consider the present submission anew.

### ***Obviousness Rejection***

Claims 1, 4, 5, and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Rätzsch et al., WO 02/48261 ("Rätzsch") in view of Skoultchi et al., U.S. Patent No. 4,770,668 ("Skoultchi"). (Paper No. 20100106 at 2.) The Examiner used the published U.S. national stage application of the Rätzsch international application, US 2005/0020750 ("the '750 publication"), as an English translation. (Id.) We also refer to the '750 publication in citing to Rätzsch.

Rätzsch discloses a method for curing aminoplast resins in which inorganic particles, which have a laminated structure and which comprise interlamellary exchangeable cations of the following type: alkali cations, alkaline-earth cations, aluminum cations, iron cations and/or manganese cations, are used as curing agents. (Rätzsch, Abstract, lines 1-6.) The resins include polycondensates of melamine or melamine derivatives and C<sub>1-10</sub>-aldehydes. (Paragraph 14, lines 1-2.) Rätzsch also discloses that "[t]he invention also relates to aminoplast resins cured in such a manner, to [provide] semi-finished products and ... molding materials." (Abstract, lines 6-8.) Among the disclosed "semifinished products and moldings" disclosed by Rätzsch are

microcapsules (Paragraph 12, lines 1-5, Paragraphs 41, 44, 60, and Paragraph 67, lines 1-2 and 6-7), yet no Examples are disclosed of the preparation of microcapsules. (Examples 1 and 2 disclose the preparation of impregnated sheet-like substrate materials, and Example 3 discloses the preparation of a laminate.)

Skoultchi discloses "adducts of cyclic ethylene urea which are useful as permanent press agents. These adducts include acid, polyacid ester, and multiester derivatives of cyclic ethylene urea and can be produced by the reaction of the cyclic ethylene urea with glyoxylic acid and glyoxylic acid derivatives, specifically ester acetals of glyoxylic acid. Such materials impart a high degree of permanent press properties to cellulose and cellulose/polymer blend fabrics." (Skoultchi, Abstract.) Skoultchi discloses that "[t]he compounds ... can be prepared by the reaction of a 2-imidazoline derivatives [sic] with glyoxylic acid or an ester acetal of glyoxylic acid to form a monoester or polyester of imidazolidinone." (Col. 2, lines 63-66.)

In making the rejection, The Examiner made the same assertions on page 2 of the present Action, Paper No. 20100106, as were presented in the prior Office Action dated June 23, 2009, Paper No. 20090611 at 2-3. These assertions were summarized in the Response to Office Action dated September 23, 2009.

In brief, we note here the Examiner's conclusion that "[a]t the time of the invention, it would have been obvious to one of ordinary skill in the art to use glyoxylic acid hemiacetals [as disclosed by Skoultchi] as the aldehyde of Rätzsch's invention because it was a known functional equivalent to Rätzsch's exemplary aldehydes while avoiding the use of toxic formaldehyde, yet providing reactivity over a wide pH range." (Paper No. 20100106 at 2.)

In the Response to Arguments section of the present Action, the Examiner asserted that "the reason why an artisan of ordinary skill would modify Ratzsch and Skoultchi ...[is that] one of ordinary skill would recognize the utility of glyoxylic acid hemiacetals as the aldehyde taught by Ratzsch because it was a known functionally equivalent compound that would avoid the use of toxic formaldehyde, as well as provide good reactivity over a wide pH range as taught by Skoultchi." (Id. at 3.)

The Examiner asserted that "Skoultchi relates to condensation products of cyclic amines with ester-group containing aldehydes. That Skoultchi has other intended uses for the final condensation product is immaterial. The reference's disclosure of the equivalency or interchangeability of ester-group containing aldehydes and aldehydes without ester groups would inform one of ordinary skill in the art to conclude the condensation product of melamine with an ester-group containing aldehyde would proceed, while avoiding the use of toxic formaldehyde." (Id. at 6.)

The Examiner also stated, "Applicant then points to the amino compounds taught by Skoultchi and notes none include the compounds used in the present claims (p12)." (Id.) The Examiner asserted that "[i]n response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. [citations omitted]." (Id.)

In addition, the Examiner stated, "Applicant again notes Skoultchi uses compounds for permanent press of fabrics (p13). Again, the examiner notes Skoultchi's disclosure is reasonably pertinent to the present case. One of ordinary skill would recognize the interchangeability of the ester group-containing aldehyde and those

without ester groups for use in amino condensation products. The primary reference, Ratzsch, discloses the suitability of aminoplast resins as capsule formers." (Id.)

For the complete recitation of the Examiner's "Response to Arguments," pages 3-7 of Paper No. 20100106 are referenced.

It is well settled the Examiner bears the burden to set forth a *prima facie* case of unpatentability. *In re Glaug*, 62 USPQ2d 1151, 1152 (Fed. Cir. 2002); *In re Oetiker*, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); and *In re Piasecki*, 223 USPQ 785, 788 (Fed. Cir. 1984). If the PTO fails to meet its burden, then the applicant is entitled to a patent. *In re Glaug*, 62 USPQ2d at 1152.

When patentability turns on the question of obviousness, as here, the search for and analysis of the prior art by the PTO should include evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and modify the document(s) relied on by the Examiner as evidence of obviousness. *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1731-32 (2007) (the obviousness "***analysis should be made explicit***" and the teaching-suggestion-motivation test is "***a helpful insight***" for determining obviousness) (emphasis added); *McGinley v. Franklin Sports*, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001). Moreover, the factual inquiry whether to modify document(s) must be thorough and searching. And, as is well settled, the teaching, motivation, or suggestion test "***must be based on objective evidence of record.***" *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002) (emphasis added). See also *Examination Guidelines for Determining Obviousness*, 72 Fed. Reg. 57526, 57528 (October 10, 2007) ("The key to supporting any rejection under 35 USC § 103 is the

clear articulation of the reason(s) why the claimed invention would have been obvious.”).

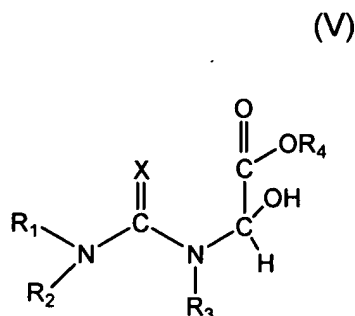
Beyond looking at the cited documents to determine if any of them suggests doing what the inventors have done, one must also consider if the art provides the required expectation of succeeding in that endeavor. See *In re Dow Chem. Co. v. American Cyanamid Co.*, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). “Obviousness does not require absolute predictability, but a reasonable expectation of success is necessary.” *In re Clinton*, 188 USPQ 365, 367 (CCPA 1976). Furthermore, the U.S. Patent and Trademark Office Examination Guidelines at page 57527 provide the following guidance to Examiners: “In short, the focus when making a determination of obviousness should be on what a person of ordinary skill in the pertinent art would have known at the time of the invention, and on what such a person would have reasonably expected to have been able to do in view of that knowledge.” However, no such motivation or expectation of success can be found in the cited documents.

Arguments submitted on the record are incorporated herein.

As evidence of the deficiency of the rejection, we submit, as noted above, the Declaration of Rudolfus van Benthem, Ph.D., under 37 C.F.R. § 1.132 which includes an Appendix containing Tables I and II as Exhibit A and the Curriculum Vitae of Dr. van Benthem as Exhibit B (“the van Benthem Declaration”). Dr. van Benthem is the inventor of the present application and a scientist at DSM with knowledge in the areas of crosslinking of crosslinked materials, chemistry of thermosetting materials such as adhesives (including melamine resins), coatings, composites and elastomers. Dr. van

Benthem's Declaration evidences that the claimed process for forming capsules is not obvious over Rätzsch in view of Skoultchi.

For the Examiner's convenience, we note that claim 1 recites a "[p]rocess for forming capsules comprising the steps of: (1) forming a solution of an amino compound (V) from a mixture of an amino compound and an alkanol hemiacetal in a solvent; (2) forming a dispersion of a core material in the solution; (3) depositing amino compound (V) as a resin upon the surface of the core material to form capsules; and (4) optionally hardening and/or recovering the capsules, whereby steps (1) and (2) are executed in either order or simultaneously, and wherein amino compound (V) has the following formula



where: X is NR<sub>5</sub>; R<sub>4</sub> is equal to a C<sub>1</sub>-C<sub>12</sub> alkyl group, aryl group, aralkyl group or cycloalkyl group; R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>5</sub> are equal to an H, alkyl, cycloalkyl, aryl or heterocyclic group; and R<sub>1</sub>, R<sub>2</sub>, and R<sub>5</sub> or R<sub>1</sub>, R<sub>2</sub>, and R<sub>3</sub> may together form a heterocyclic group."

In the van Benthem Declaration, Dr. van Benthem declares that "[t]he disclosure of preparation of adducts for use as permanent press agents in Skoultchi would not have provided any expectation of success in preparing capsules, as in the claimed process. In Skoultchi a solution of the adduct material is applied to a fabric and treated to crosslink the fabric. (Col. 5, line 63 – Col. 6, line 24.) Skoultchi provides no

suggestion as to whether the disclosed adducts, if present in a dispersion containing a core material and a wall forming materials, i.e., the adduct, would phase separate from the continuous phase so as to result in encapsulation of the core material.” (van Benthem Decl., ¶ 9.)

Dr. van Benthem states that “[f]urthermore, Skoultchi discloses the use of ‘adducts of cyclic ethylene urea.’ The reactant used by Skoultchi is 2-imidazolidinone, i.e., ethylene urea, which does not encompass or suggest melamine or melamine derivatives for use in the claimed process of forming capsules. The urea compounds of Skoultchi have an oxygen molecule in the corresponding position as substituent X in formula (V) which is  $NR_5$  in the claimed process. Accordingly, the 2-imidazolidinone and melamine differ in the number and position of amino groups. It is known that ethylene ureas that form resins with formaldehyde have different reactivities than melamine-formaldehyde resins. It would not have been expected that these resins would work in the same way. One could not predict success from the use of urea resins as in Skoultchi for use as permanent press agents in using melamine resins in a process for encapsulation.” (van Benthem Decl., ¶ 10.)

In addition, Dr. van Benthem states that “one skilled in the art would not have predicted success in using methyl glyoxylate as the aldehyde in place of the aldehyde of Rätzsch reacted with melamine, in the claimed process for preparing capsules.” (van Benthem Decl., ¶ 11.) “To demonstrate that the claimed process is not obvious over Rätzsch in view of Skoultchi,” Dr. van Benthem states that he provides “the results of studies performed that are relevant to this issue....” (Id.) Dr. van Benthem also states that the studies were performed with his knowledge by a scientist



within his Research Group at DSM. (Id.) Although the evaluation was not performed under his direct supervision and direction, Dr. van Benthem indicates that he “[has] responsibility as the Research Group leader for the results obtained....” (Id.)

As noted above, Skoultchi discloses that the aldehydes glyoxylic acid and an ester acetal of glyoxylic acid are equivalent or interchangeable in their reaction with 2-imidazoline to form a monoester or polyester of imidazolidinone. (Col. 2, lines 63-66.) In the van Benthem Declaration, Dr. van Benthem states that “[a]n evaluation was made of the performance of glyoxylic acid, which is an aldehyde having an acid end group, in attempting to prepare capsules by reacting melamine with glyoxylic acid. Glyoxylic acid was used in place of methyl glyoxylate, the methyl ester acetal of glyoxylic acid, in the procedure disclosed in Example 1 of the present specification. Glyoxylic acid was used in the same and in a similar molar ratio as was methyl glyoxylate in Example 1.” (van Benthem Decl., ¶ 12.) Dr. van Benthem notes that “[w]hen melamine was reacted with methyl glyoxylate in accordance with Example 1 of the present specification, capsules resulted.” (Id. at ¶ 13.) Example 1 is duplicated within the van Benthem Declaration, paragraph 13. Included, by way of footnote 2, is the molar ratio of melamine to methyl glyoxylate used in the procedure of Example 1, namely 1 : 2.03.

Dr. van Benthem indicates that “[i]n the evaluation of glyoxylic acid, four attempts were made to prepare capsules which are identified as Attempts A-D.... In the procedures used, melamine and glyoxylic acid were provided in the same and in a similar molar ratio as the 1 : 2.03 molar ratio used in Example I for melamine and methyl glyoxylate. In Attempts A-C, the same molar ratio was used; in Attempt D, a molar ratio

of 1 : 2.01 was used.” (van Benthem Decl., ¶ 14.) The procedures of Attempts A-D are provided in the van Benthem Declaration, paragraphs 15-21.

Dr. van Benthem discloses that “[i]n all of the Attempts, problems were encountered.” (van Benthem Decl., ¶ 22.) Dr. van Benthem explains that “[o]btaining a homogeneous melamine/glyoxylic acid mixture, which would be indicated by a clear solution, is important to attain proper encapsulation.” (Id.) In Attempt A, however, “gelation began well before the solution had a chance to turn clear.” (Id.) And, “[t]he mixture became turbid and thick and could not be mixed with an Ultra Turrax T25.” (Id.) “Because Attempt A was not successful in producing capsules,” Dr. van Benthem indicates that “different yet analogous conditions were tried in Attempts B-D in which one or more parameters were changed to try to identify experimental parameters that may be suitable to obtain capsules.” (Id.) He explains that “[i]n these Attempts, the order of addition of the various components was changed (Attempt B), the method of heating to the desired temperature was changed (Attempt C), and the molar ratio of melamine to glyoxylic acid was changed (Attempt D). “In all of the Attempts, the mixtures obtained became too thick to be stirred with an Ultra Turrax T25.” (Id.) Dr. van Benthem concludes that “[c]onsiderable thickening of the mixtures occurred in Attempts A, B, and C, and no capsules resulted from Attempts A, B, or C.” (van Benthem Decl., ¶ 23.)

Dr. van Benthem indicates that “[i]n Attempt D, a (non-turbid) slurry resulted from the reaction, yet no clear solution was observed. Thus, a homogeneous solution did not result. Although the mixture including the added coloring agent thickened to some extent, upon addition of a dispersing agent, it was possible to pour

the mixture and place it in cold water (under gentle stirring). Upon filtering, however, the filter became blocked and the filtrate was significantly colored. The intended core material, the colorant, was observed in the filtrate.” (van Benthem Decl., ¶ 24.) Dr. van Benthem concluded that “encapsulation did not occur or sufficient encapsulation did not occur during the procedure of Attempt D.” (Id.)

In view of the results of Attempts A-D, Dr. van Benthem opines that “the reaction of melamine with glyoxylic acid does not result in sufficient encapsulation. In Attempts A-C, encapsulation did not result; in Attempt D, no capsules were produced or sufficient encapsulation did not result.” (van Benthem Decl., ¶ 25.) He further opines that “[b]ecause the encapsulation according to Example 1 of the present application which reacts melamine with methyl glyoxylate was found to produce sufficient encapsulation and Attempts A-D disclosed herein which react melamine with glyoxylic acid under similar experimental conditions did not produce sufficient encapsulation, ... glyoxylic acid is not equivalent to methyl glyoxylate in its reaction with melamine in attempting to produce capsules.” (van Benthem Decl., ¶ 26.)

Workers in the field may have considered possible ways to form capsules which would not release free formaldehyde. Yet achieving a process for forming capsules as claimed would not have been predictable to one of skill in the art. The Examiner had asserted, *inter alia*, that Skoultchi's disclosure of the equivalency or interchangeability of ester-group containing aldehydes and aldehydes without ester groups would inform one of ordinary skill in the art to conclude the condensation product of melamine with an ester-group containing aldehyde would proceed, while avoiding the use of toxic formaldehyde.” (Paper No. 20100106 at 6). In the van Benthem

Declaration, Dr. van Benthem indicates, however, that an evaluation reacting melamine with glyoxylic acid under similar experimental conditions as Example 1 of the present application "did not produce sufficient encapsulation." Contrary to the Examiner's assertions, it is Dr. van Benthem's opinion that "glyoxylic acid is not equivalent to methyl glyoxylate in its reaction with melamine in attempting to produce capsules." (van Benthem Decl., ¶¶ 26, 27.)

As noted above, Skoultchi discloses that either of the aldehydes, glyoxylic acid or an ester acetal of glyoxylic acid, can be reacted with a 2-imidazolidinone to prepare adducts useful as permanent press agents. In the van Benthem Declaration, Dr. van Benthem states that "[o]ne skilled in the art would have understood that Skoultchi discloses that the two aldehydes, namely the glyoxylic acid and the ester acetal of glyoxylic acid, are interchangeable in the reactions disclosed by Skoultchi to prepare permanent press agents." (van Benthem Decl., ¶ 27.) Yet Dr. van Benthem states that "it is shown [in the van Benthem Declaration] that glyoxylic acid is not equivalent to methyl glyoxylate in its reaction with melamine in attempting to produce capsules. The aldehydes disclosed in Skoultchi would not have been considered interchangeable with the aldehyde of Rätzsch with any expectation of success in preparing capsules. Thus, what one skilled in the art would have known – that the disclosure of Skoultchi regarding the preparation of adducts (using either of the aldehydes disclosed as equivalent, glyoxylic acid or methyl glyoxylate) for use as permanent press agents would not have provided any expectation of success in preparing capsules, as in the claimed process - has been confirmed." (Id.)

Dr. van Benthem concludes that “[i]n view of all of the foregoing, it is my opinion that one of ordinary skill in the art would not have expected success in the use of methyl glyoxylate and melamine in the claimed process for forming capsules in view of Rätzsch’s disclosure of a melamine-aldehyde in the formation of capsules combined with Skoultchi’s disclosure of 2-imidazolidinone reacted with glyoxylic acid or methyl glyoxylate for use as permanent press agents.” (van Benthem Decl., ¶ 28.) Dr. van Benthem also concludes that “[i]n view of all of the foregoing, it is also my opinion that the Examiner’s alleged applicability of Skoultchi’s disclosure of preparing permanent press agents in combination with Rätzsch for achieving the claimed process of making capsules in relation to the claimed process for forming capsules has been undermined.” (van Benthem Decl., ¶ 29.)

Here, known process options were not “finite, identified, and predictable,” as in the facts presented in *KSR Int. Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007). Moreover, in *Abbott Labs. v. Sandoz, Inc.*, 89 USPQ 1161, 1171 (Fed. Cir. 2008), the Court of Appeals for the Federal Circuit indicated that the Supreme Court in *KSR* “did not create a presumption that all experimentation in fields where there is already a background of useful knowledge is ‘obvious to try,’ without considering the nature of the science or technology.”

The Court of Appeals for the Federal Circuit has reaffirmed that “hindsight claims of obviousness” are improper. In distinguishing between fact patterns where a combination of known elements may or may not be proper, the Federal Circuit clearly articulated that simply varying all possible parameters until the claimed invention is arrived at in the absence of either an indication of which parameters to vary or an

indication of which of many possible choices is likely to be successful is impermissible hindsight reconstruction. Indeed, the Federal Circuit concluded:

Similarly, patents are not barred just because it was obvious "to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it." *Procter & Gamble Co. v. Teva Pharmaceuticals USA, Inc.*, 90 USPQ2d 1947, 1951 (Fed. Cir. 2009), citing *In re O'Farrell*, 853 F.2d at 903.

As evidenced by the van Benthem Declaration, one skilled in the art would not have anticipated success in achieving the presently claimed process for forming capsules comprising the use of an amino compound (V) formed from a mixture of an amino compound and an alkanol hemiacetal, as claimed, as "knowledge of the goal does not render its achievement obvious." *Abbott Labs. v. Sandoz, Inc.*, 89 USPQ at 1172 (affirming the district court's determination that Abbott is likely to prevail in its claim that the patent is valid, and upholding the grant of a preliminary injunction). Moreover, the Examiner's assertion that it would have been obvious to replace the aldehyde of Rätzsch with an aldehyde of Skoultchi, particularly an ester-group containing aldehyde because of the Examiner's alleged equivalency or interchangeability of ester-group containing aldehydes and aldehydes without ester groups per Skoultchi, has been undermined. As evidenced by the van Benthem Declaration, the aldehydes of Skoultchi are not equivalent in their reaction with melamine in attempting to prepare capsules.

Clearly, the Examiner's rejection citing Rätzsch in view of Skoultchi is improper. Furthermore, it is respectfully submitted that the rejection has been rendered moot.

Reconsideration and withdrawal of the rejection are requested.


Application No.: 10/560,212

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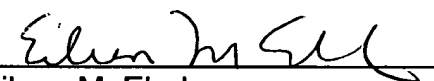
Reply to Office Action Dated: January 13, 2010

In view of all of the foregoing, entry of the amendments to the specification and withdrawal of the outstanding rejection is respectfully requested. It is submitted that the application is in condition for allowance. Issuance of a Notice of Allowance is respectfully requested.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on May 5, 2010.

  
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